Publications

BOARD MEETING
June 22, 2010
Highway Accident Report - Bus Loss of Control and Rollover (HWY-09-MH-009)
Dolan Springs, Arizona
January 30, 2009
Highway Accident Report
NTSB/HAR-10/01

This is a synopsis from the Safety Board's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. Safety Board staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing.

EXECUTIVE SUMMARY

On Friday, January 30, 2009, about 4:06 p.m. mountain standard time, a 2007 Chevrolet/Starcraft 29-passenger medium-size bus, operated by DW Tour and Charter and occupied by the driver and 16 passengers, was traveling northbound in the right lane of U.S. Highway 93, a four-lane divided highway, near Dolan Springs, Arizona. The bus was on a return trip from Grand Canyon West to Las Vegas, Nevada, after a day-long tour. As the bus approached milepost 28 at an estimated speed of 70 mph, it moved to the left and out of its lane of travel. The driver steered sharply back to the right, crossing both northbound lanes and entering the right shoulder. The driver subsequently overcorrected to the left, causing the bus to yaw and cross both northbound lanes. The bus then entered the depressed earthen median and overturned 1.25 times before coming to rest on its right side across both southbound lanes. During the rollover sequence, 15 of the 17 occupants (including the driver) were fully or partially ejected. Seven passengers were killed, and nine passengers and the driver received injuries ranging from minor to serious. At the time of the accident, the roadway was dry and the weather clear.

CONCLUSIONS

1. Given the sun's position relative to the bus and the driver's line of sight, the sun did not limit the driver's forward vision.
2. The bus driver's health did not cause or contribute to the accident.
3. The bus driver was not under the influence of drugs or alcohol at the time of the accident.
4. The bus driver was properly licensed and was familiar with both the route and the accident vehicle.
5. The bus driver was not using his cellular telephone at the time of the accident.

6. The bus had no preexisting mechanical defects that could have caused or contributed to the accident.
7. Neither the design nor the maintenance of the highway contributed to the accident.
8. The emergency response was timely, especially considering the isolated location of the accident scene.
9. Although DW Tour's safety management program was lacking in terms of periodic inspections, the condition of the vehicle did not cause or contribute to the accident.
10. The bus driver was not impaired by fatigue at the time of the accident.
11. The bus driver shifted his gaze and attention to the left to attend to the driver's side door.
12. The bus driver was distracted by the driver's side door, causing the vehicle to drift leftward, which triggered the subsequent accident sequence.
13. Had the accident bus been equipped with a lane departure warning system, the driver would have been alerted to the leftward drift of the bus, which might have provided an opportunity to take corrective action in a timely manner, thus avoiding the severe steering maneuver to the right that initiated the accident sequence.
14. In the 11 years since the National Transportation Safety Board issued its initial safety recommendations requiring the development of standard regulatory definitions and classifications for the different bus body types, the U.S. Department of Transportation still does not have standard regulatory definitions.
15. Because the lack of Federal standards for occupant protections, roof strength, and advanced window glazing, occupants of motorcoaches and medium-size buses are similarly at risk of ejection during rollover accidents.
16. The detachment of overhead luggage racks presents a potential injury source for both restrained and unrestrained bus passengers.
17. Based on accident simulations, the likelihood of the driver losing control and crashing would have been lower had the accident bus been equipped with a stability control system.
18. The availability of recorded event data would have resulted in a more complete account of the pre-accident events leading to the rollover of the accident bus.
19. Having event data recorders on all buses above 10,000 pounds gross vehicle weight rating would greatly increase the understanding of crash causation and be helpful in further establishing design requirements for crashworthiness and occupant protection systems.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the January 30, 2009, accident near Dolan Springs, Arizona, was the bus driver's inadvertent drift from the driving lane due to distraction caused by his manipulation of the driver's side door and subsequent abrupt steering maneuver, which led to losing directional control of the vehicle. Contributing to the severity of the accident was the lack of both occupant protection and advanced window glazing standards for medium-size buses.

RECOMMENDATIONS

New Recommendations

To the National Highway Traffic Safety Administration:

1. Require new commercial motor vehicles with a gross vehicle weight rating above 10,000 pounds to be equipped with lane departure warning systems. (H-10-xx)
2. To maintain consistency in bus body classifications and to clarify the scope of bus safety initiatives, develop regulatory definitions and classifications for each of the different bus body types that would apply to all U.S. Department of Transportation agencies and promote use of the definitions among the bus industry and state governments. (H-10-xx) (This recommendation supersedes Safety Recommendations H-99-43 and -44 and is classified "Open—Unacceptable Response.")
3. In your rulemaking to improve motorcoach roof strength, occupant protection, and window glazing standards, include all buses with a gross vehicle weight rating above 10,000 pounds, other than school buses. (H-10-xx)
4. Develop performance standards for all newly manufactured buses with a gross vehicle weight rating above 10,000 pounds to require that overhead luggage racks are constructed and installed to prevent head and neck injuries and remain anchored during an accident sequence. (H-10-xx) (This recommendation supersedes Safety Recommendations H-09-23 and -24.)
5. Develop stability control system performance standards applicable to newly manufactured buses with a gross vehicle weight rating above 10,000 pounds. (H-10-xx)
6. Once the performance standards from Safety Recommendation 5 have been developed, require the installation of stability control systems in all newly manufactured buses in which this technology could have a safety benefit. (H-10-xx).
7. Require that all buses above 10,000 pounds gross vehicle weight rating be equipped with on-board recording systems that: (1) record vehicle parameters, including, at minimum, lateral acceleration, longitudinal acceleration, vertical acceleration, heading, vehicle speed, engine speed, driver's seat belt status, braking input, steering input, gear selection, turn signal status (left/right), brake light status (on/off), head/tail light status (on/off), passenger door status (open/closed), emergency door status (open/closed), hazard light status (on/off), brake system status (normal/warning), and flashing red light status (on/off; school buses only); (2) record status of additional seat belts, airbag deployment criteria, airbag deployment time, and airbag deployment energy; (3) record data at a sampling rate sufficient to define vehicle dynamics and be capable of preserving data in the event of a vehicle crash or an electrical power loss; and (4) are mounted to the bus body, not the chassis, to ensure recording of the necessary data to define bus body motion. (H-10-xx) (This recommendation supersedes Safety Recommendation H-99-53 and is classified "Open—Unacceptable Response.")

Previously Issued Recommendations Classified in This Report

The National Transportation Safety Board classifies the following previously issued recommendations:

- Safety Recommendation H-99-43 to the U.S. Department of Transportation (previously classified "Open—Acceptable Alternate Response") is classified "Closed—

Unacceptable Action/Superseded" (replaced by Safety Recommendation 2) in the "Regulatory Definition of Buses" section of this report.

- Safety Recommendation H-99-44 to the U.S. Department of Transportation (previously classified "Open—Acceptable Response") is classified "Closed—Unacceptable Action/Superseded" (replaced by Safety Recommendation 2) in the "Regulatory Definition of Buses" section of this report.
- Safety Recommendation H-99-53 to the National Highway Traffic Safety Administration (previously classified "Open—Unacceptable Response") is classified "Closed—Unacceptable Action/Superseded" (replaced by Safety Recommendation 7) in the "Event Data Recorders" section of this report.
- Safety Recommendation H-09-23 to the National Highway Traffic Safety Administration (previously classified "Open—Initial Response Received") is classified "Closed—superseded" (replaced by Safety Recommendation 4) in the "Luggage Racks" section of this report.
- Safety Recommendation H-09-24 to the National Highway Traffic Safety Administration (previously classified "Open—Initial Response Received") is classified "Closed—Superseded" (replaced by Safety Recommendation 4) in the "Luggage Racks" section of this report.